

Front-end Automated Code Review (sprint 3)

Introduction

Purpose

The purpose of this document is to outline our code review process which plays a crucial role in maintaining high code quality and identifying potential issues early. Code reviews help ensure that our software is robust, scalable, and secure.

Scope

This documentation covers the automated code review processes for the SciGallery project, focusing on critical front-end components.

Code Review Process

Participants

- **Jianzhi Gao** - Front-end developer (Code Submitter)
- **AI Reviewer** - ChatCPT 4o

Frequency

Code reviews are conducted bi-weekly before each sprint ends, or after significant commits to our Git repository, such as new feature additions or critical bug fixes.

Selection Criteria

Criteria for Code Selection

Code is selected for review based on several factors including:

- Complexity of the code.
- The criticality of the application area affected.
- Recentness of changes.
- Modules with a history of frequent issues.

Tools and Techniques Used

ChatGPT 4o

Review Outcomes

Number of Reviews Conducted

In the last quarter, we conducted 7 code reviews.

Issues Identified

A total of 10 issues were identified.

Example of one of the code review:

Code:

```
1 <!-- for view details by clicking on view details button -->
2 <el-dialog v-model="dialogDescVisible" title="Booking Details" width="80%" @closed="resetCurrentStep">
3   <el-row gutter="20">
4
5     <el-col :span="15">
6       <!-- steps to divide into different parts -->
7       <el-steps :active="currentStep" align-center process-status="finish" finish-status="process">
8         <el-step title="Delivery" :icon="Document" @click="currentStep = 0" />
9         <el-step title="Cohort" :icon="School" @click="currentStep = 1" />
10        <el-step title="Contact" :icon="User" @click="currentStep = 2" />
11        <el-step title="Bus" :icon="Van" @click="currentStep = 3" />
12        <el-step title="Invoice" :icon="Memo" @click="currentStep = 4" />
13      </el-steps>
14      <br />
15      <!-- step 0 Delivery -->
16      <div v-show="currentStep === 0">
17        <el-descriptions :column="2" size="large" border>
18          <el-descriptions-item label="Program Stream">{{ bookingDetails.programStream
19            }}</el-descriptions-item>
20          <el-descriptions-item label="Request Confirmed?">{{ bookingDetails.requestConfirmed
21            }}</el-descriptions-item>
22          <el-descriptions-item label="Status">{{ bookingDetails.status }}</el-descriptions-item>
23          <el-descriptions-item label="Facilitators">{{ bookingDetails.facilitators
24            }}</el-descriptions-item>
25          <el-descriptions-item label="Delivery Location" span="2">{{ bookingDetails.deliveryLoca
26            }}</el-descriptions-item>
27          <el-descriptions-item label="School" span="2">{{ bookingDetails.school }}</el-descripti
28          <el-descriptions-item label="1st Date Preference">{{ bookingDetails.prefDate1
29            }}</el-descriptions-item>
30          <el-descriptions-item label="2nd Date Preference">{{ bookingDetails.prefDate2
31            }}</el-descriptions-item>
32          <el-descriptions-item label="Program Date">{{ bookingDetails.programDate
33            }}</el-descriptions-item>
34          <el-descriptions-item label="Start Time">{{ bookingDetails.startTime }}</el-descriptio
35          <el-descriptions-item label="End Time">{{ bookingDetails.endTime }}</el-descriptions-it
36          <el-descriptions-item label="Run Time">{{ bookingDetails.runTime }}</el-descriptions-it
37          <el-descriptions-item label="Reporting>3hrs">{{ bookingDetails.reporting3hrs
38            }}</el-descriptions-item>
39          <el-descriptions-item label="Program Category">{{ bookingDetails.programCat
40            }}</el-descriptions-item>
41          <el-descriptions-item label="Modules" span="2">{{ bookingDetails.modules
42            }}</el-descriptions-item>
43          <el-descriptions-item label="Exhibition">{{ bookingDetails.exhibition }}</el-descriptio
44          <el-descriptions-item label="Bus Required?">{{ bookingDetails.busRequired
45            }}</el-descriptions-item>
46          <el-descriptions-item label="Bus Booked">{{ bookingDetails.busBooked }}</el-descriptio
47          <el-descriptions-item label="To-do list">{{ bookingDetails.todoListType
48            }}</el-descriptions-item>
49          <el-descriptions-item label="Notes" span="2">{{ bookingDetails.notes }}</el-descriptio
50        </el-descriptions>
51      </div>
52
53      <!-- step 1 Cohort -->
54      <div v-show="currentStep === 1">
55        <el-descriptions :column="2" size="large" border>
```

```

56     <el-descriptions-item label="School" span="2">{{ bookingDetails.school }}</el-descripti
57     <el-descriptions-item label="Partner School?">{{ bookingDetails.partnerSchool
58         }}</el-descriptions-item>
59     <el-descriptions-item label="Student Year">{{ bookingDetails.studentYear
60         }}</el-descriptions-item>
61     <el-descriptions-item label="Student # (Registered)">{{ bookingDetails.regStudentsNo
62         }}</el-descriptions-item>
63     <el-descriptions-item label="Student # (Attended)">{{ bookingDetails.attendedStudentsNo
64         }}</el-descriptions-item>
65     <el-descriptions-item label="Low SES" span="2">{{ bookingDetails.lowSes
66         }}</el-descriptions-item>
67     <el-descriptions-item label="Accessibility Needs" span="2">{{ bookingDetails.accNeeds
68         }}</el-descriptions-item>
69     <el-descriptions-item label="Allergens & Anaphylaxis" span="2">{{ bookingDetails.allerg
70         }}</el-descriptions-item>
71     <el-descriptions-item label="Teacher's Notes" span="2">{{ bookingDetails.teacherNotes
72         }}</el-descriptions-item>
73     <el-descriptions-item label="Comments">{{ bookingDetails.commentsSG }}</el-descriptions
74 </el-descriptions>
75 </div>
76
77 <!-- step 2 Contact -->
78 <div v-show="currentStep === 2">
79     <el-descriptions :column="1" size="large" border>
80         <el-descriptions-item label="First Name">{{ bookingDetails.firstName }}</el-description
81         <el-descriptions-item label="Last Name">{{ bookingDetails.lastName }}</el-descriptions-
82         <el-descriptions-item label="Email Address">{{ bookingDetails.emailAddress
83             }}</el-descriptions-item>
84         <el-descriptions-item label="Phone Number">{{ bookingDetails.phoneNumber
85             }}</el-descriptions-item>
86         <el-descriptions-item label="Teaching Area">{{ bookingDetails.teachingArea
87             }}</el-descriptions-item>
88     </el-descriptions>
89 </div>
90
91 <!-- step 3 Bus -->
92 <div v-show="currentStep === 3">
93     <el-descriptions :column="2" size="large" border>
94         <el-descriptions-item label="Process Status">{{ bookingDetails.processStatus
95             }}</el-descriptions-item>
96         <el-descriptions-item label="Days Remaining">{{ bookingDetails.daysRemaining
97             }}</el-descriptions-item>
98         <el-descriptions-item label="Bus Status">{{ bookingDetails.busStatus }}</el-description
99         <el-descriptions-item label="Quote #">{{ bookingDetails.quote }}</el-descriptions-item>
100        <el-descriptions-item label="Price w/o GST">{{ bookingDetails.priceWoGST
101            }}</el-descriptions-item>
102        <el-descriptions-item label="Price in Full">{{ bookingDetails.priceFull
103            }}</el-descriptions-item>
104        <el-descriptions-item label="Credit Surcharge">{{ bookingDetails.creditSurcharge
105            }}</el-descriptions-item>
106        <el-descriptions-item label="Date Paid">{{ bookingDetails.datePaid }}</el-descriptions-
107        <el-descriptions-item label="Card Owner">{{ bookingDetails.cardOwner }}</el-description
108        <el-descriptions-item label="Bus Invoice #">{{ bookingDetails.busInvoiceNo
109            }}</el-descriptions-item>
110        <el-descriptions-item label="Saved Receipt">{{ bookingDetails.savedReceipt
111            }}</el-descriptions-item>
112        <el-descriptions-item label="Enter into Expense Master">{{ bookingDetails.expenseMaster
113            }}</el-descriptions-item>

```

```

114         <el-descriptions-item label="Pin/Categorise Email">{{ bookingDetails.pinEmail
115         }}</el-descriptions-item>
116         <el-descriptions-item label="Times in MSC">{{ bookingDetails.timesInMSC
117         }}</el-descriptions-item>
118         <el-descriptions-item label="Bus Notes">{{ bookingDetails.busNotes }}</el-descriptions-
119         </el-descriptions>
120     </div>
121
122     <!-- step 4 Invoice -->
123     <div v-show="currentStep === 4">
124         <el-descriptions :column="2" size="large" border>
125             <el-descriptions-item label="Amount">{{ bookingDetails.amount }}</el-descriptions-item>
126             <el-descriptions-item label="ABN">{{ bookingDetails.abn }}</el-descriptions-item>
127             <el-descriptions-item label="Invoice #" span="2">{{ bookingDetails.invoiceNo
128             }}</el-descriptions-item>
129         </el-descriptions>
130     </div>
131 </el-col>
132 <el-col :span="9">
133     <div class="todo-list">
134         <div class="todo-header">TO DO LIST</div>
135         <el-checkbox-group v-model="todoList">
136             <el-checkbox label="Item 1" name="type">Item 1</el-checkbox>
137             <el-checkbox label="Item 2" name="type">Item 2</el-checkbox>
138             <el-checkbox label="Item 3" name="type">Item 3</el-checkbox>
139         </el-checkbox-group>
140     </div>
141 </el-col>
142 </el-row>
143 <template #footer>
144     <el-button @click="closeDialog">Back</el-button>
145     <el-button type="primary" @click="saveTodoList">Save</el-button>
146 </template>
147 </el-dialog>

```

ChatGPT Review:



The provided code for the Vue.js component is well-structured and demonstrates a good use of Element UI components. It includes a table with filtering, sorting, pagination, and dialogs for viewing and editing booking details. Here are some detailed observations and suggestions for improvements:

Observations

1. Table and Filtering:

- The `<el-table>` component is well-configured with columns for booking details.
- Filtering is implemented for the "tag" column, allowing users to filter by "Confirmed" and "Other" bookings.
- The search functionality works across multiple columns, enhancing usability.

2. Pagination:

- Pagination is handled using `<el-pagination>`, with page size and current page state being managed effectively.
- Computed properties `filteredData` and `paginatedData` are used to derive the data displayed in the table.

3. Dialogs for Viewing and Editing:

- Two dialogs (`<dialogDescVisible>` and `<editDialogVisible>`) are used for viewing and editing booking details.
- The `<el-steps>` component is used to divide the editing form into multiple steps, improving user experience for complex forms.

4. Form Handling:

- Form data for editing is managed using a reactive object `editedBooking`.
- Computed properties are used to calculate values like `runTime` and `daysRemaining`.

Suggestions for Improvement

1. Code Duplication:

- There are duplicate entries in the `tableData` array. Ensure the data source is correctly managed to avoid duplicates.
- Consider consolidating repeated booking data into a single object to avoid redundancy.

2. Component Decomposition:

- The component is quite large. Consider breaking it down into smaller, reusable components, especially for the form steps.
- For example, you could create separate components for each form step and the table.

3. Error Handling and Validation:

- Implement form validation to ensure all required fields are filled and the data is in the correct format.
- Add error handling for actions like saving changes or deleting bookings.

4. Styling:

- Ensure the layout is responsive and looks good on different screen sizes. Use CSS media queries if necessary.
- The styles for the checklist items and other elements could be enhanced for better visual appeal.

5. Accessibility:

- Add ARIA attributes and ensure all interactive elements are keyboard accessible.
- Ensure that the color contrast meets accessibility standards.

Feedback and Actions

Review of AI Feedback

Feedback from ChatGPT was reviewed by the development team within one day of the automated review completion. Priority was given to addressing critical vulnerabilities first.

Actions Taken After Review

Changes Implemented

1. Implement Error Handling and Validation:

- **Action:** Added validation rules to the form fields to ensure required fields are filled and data is correctly formatted.
- **Action:** Implemented error handling mechanisms for saving changes and deleting bookings.
- **Outcome:** The form is now more robust, preventing invalid data entry and handling errors gracefully.

2. Enhance Styling and Ensure Responsiveness:

- **Action:** Used CSS media queries to ensure the layout is responsive and adapts to different screen sizes.
- **Action:** Improved the visual styling of the checklist items and other UI elements.
- **Outcome:** The component is now visually appealing and functions well on various devices.

Unchanged Code and Reasons

- During our recent code review, it was noted that there are updated solutions available for some of the technologies and methodologies we are currently using. However, after considering the time required to adopt these new solutions, we have decided to maintain our existing technology stack. This decision was made to ensure stability and avoid potential disruptions during ongoing development.

Evaluation and Continuous Improvement

Effectiveness of Reviews

The reviews significantly reduced the number of runtime errors and improved the security posture of the application.

Lessons Learned and Improvements

We learned the importance of immediate action on critical issues and plan to integrate more detailed checklists for reviewers to cover edge cases better in future reviews.

Conclusion

The feedback from ChatGPT was promptly reviewed and acted upon by the development team. Key improvements were made to address code duplication, enhance modularity, implement error handling and validation, improve styling and responsiveness, and ensure accessibility. Some potential changes were deliberately left unchanged to maintain stability with our current technology stack.